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UNITED STATES PATENT AND TRADEMARK OFFICE

BEFORE THE BOARD OF PATENT APPEALS
AND INTERFERENCES

Ex parte BERTOLD GRUETZMACHER,
MARTIN GUTFLEISCH,
GERALD ERIK HAUPTMANN, and
GERHARD PEITER

Appeal 2008-2693
Application 10/655,928
Technology Center 2800

Decided: August 27, 2008

Before BRADLEY R. GARRIS, CATHERINE Q. TIMM, and
MICHAEL P. COLAIANNI, *Administrative Patent Judges*.

TIMM, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellants appeal under 35 U.S.C. § 134(a) from the Examiner's decision rejecting claims 1-9. We have jurisdiction under 35 U.S.C. § 6(b).

We AFFIRM.

I. BACKGROUND

The invention relates to a print substrate-contacting element including a microstructured carrier with an ink-repellent coating on its surface. Claim 1 is illustrative:

> 1. A print substrate-contacting element comprising:
>
> a microstructured carrier having a surface; and
>
> an ink-repellent coating on the surface of the microstructured carrier, the ink-repellent coating including a derivative of an amphiphilic organic compound having a polar region with an acidic character.

On review are the Examiner's rejections of:

1. Claims 1-3 under 35 U.S.C. § 102(b) as anticipated by Gross (US 6,649,266 B1 issued Nov. 18, 2003 to Gross et al.);
2. Claims 1-4 and 7-9 under 35 U.S.C. § 103(a) as unpatentable over Wirz (US 5,479,856 issued Jan. 2, 1996) in view of Gross and further in view of Mohr (US 4,427,766 issued Jan. 24, 1984); and
3. Claims 5 and 6 under 35 U.S.C. § 103(a) as unpatentable over Wirz, Gross, and Mohr, and further in view of Boardman (US 6,824,882 B2 issued Nov. 30, 2004 to Boardman et al.).

II. DISCUSSION

Anticipation by Gross

With respect to the rejection of claims 1-3 as anticipated by Gross, Appellants focus their arguments on claim 1 and, therefore, we select claim 1 as representative for resolving the issues on appeal. Specifically, Appellants contend that "Gross does not disclose 'a derivative of an

amphiphilic organic compound' as in claim 1," nor the required "polar region with an acidic character." (Br. 3-4; Reply Br. 2-3).

The Examiner responds that Gross discloses that the coating can contain the organic compounds styrene, acrylic acid, and methacrylic acid (Gross, col. 5, ll. 46-50) and that the compounds can additionally carry functional groups, such as OH groups (Gross, col. 5, ll. 49-51) (Ans. 6-7). According to the Examiner, the presence of an OH group is indicative of amphiphilic and acid properties (Ans. 6-7). The Examiner further determines that the claim language does not require that the compound actually be acidic or an acid (Ans. 7).

The issue on appeal is: have Appellants shown that the Examiner reversibly erred in finding that Gross describes "a derivative of an amphiphilic organic compound having a polar region with an acidic character"?

We answer this question in the negative.

Gross describes microstructured substrates coated with a composition including condensates of compounds containing hydrolysable groups A and non-hydrolysable carbon-containing groups B (Gross, col. 2, ll. 1-9). The non-hydrolysable carbon-containing groups B contain some group B' compounds (Gross, col. 2, ll. 11-12). Group B' compounds contain from on average 5 to 30 fluorine atoms attached to aliphatic carbon atoms, i.e., a non-polar hydrophobic carbon chain (Gross, 2, ll. 12-15). In addition to non-polar aliphatic carbon chains, the compounds contain polar groups (*see, e.g.*, Gross, col. 4, ll. 8-16; col. 5, ll. 35-51; Examples). When the compounds are condensed and used as coatings, the resulting surface layer has large contact angles with respect to both water and oils (low tendency to be wetted by

water or oil, i.e., both hydrophilic and hydrophobic) (Gross, col. 1, ll. 63-67; col. 2, l. 63 to col. 3, l. 12; Examples). Based on the polar and non-polar functionalities in the compounds and the surface wetting properties of the coating formed from the condensates of the compounds, it is reasonable to conclude that the compounds, and the condensates of those compounds, have polar hydrophilic groups and non-polar hydrophobic groups such that they are amphiphilic.

Moreover, the compounds may be derived using such polar acid compounds as acrylic acid, methacrylic acid, or derivatives thereof and may contain further OH groups (col. 5, ll. 46-51). Under such circumstances, the resulting compounds and condensates would be derived from compounds having polar groups of acidic character. In fact, Gross exemplifies a coating composition derived from methacrylic acid (Example 1).

While Appellants argue that the compounds undergo structural and functional changes in the condensation reaction and there is no disclosure that the condensate is an amphiphilic organic substance (Br. 3), we note that the claim encompasses *derivatives* of amphiphilic organic compounds and such condensates would be such derivatives even if they are not themselves amphiphilic. That being said, it appears from the wetting data provided in the examples of Gross that the condensates are also amphiphilic compounds.

Appellants have not shown that the Examiner reversibly erred in finding that Gross describes "a derivative of an amphiphilic organic compound having a polar region with an acidic character." Therefore, we sustain the rejection of claims 1-3 under 35 U.S.C. § 102(b) as anticipated by Gross.

Obviousness over Wirz, Gross, and Mohr

The Examiner rejects claims 1-4 and 7-9 as obvious over Wirz, Gross, and Mohr relying upon Wirz as teaching a printing press with a print substrate-contacting element (impression cylinder), Gross as teaching a microstructured carrier, and Mohr as teaching an ink-repellant coating including a derivative of an amphiphilic compound having a polar region with an acidic character (phosphonic acid derivative) (Ans. 4-5). According to the Examiner, it would have been obvious to modify the print substrate-contacting element of Wirz with the microstructure of Gross and the phosphonic acid derivative of Mohr to improve the ink repellency of the print substrate-contacting element (Ans. 5).

Appellants contend that "there is no motivation to modify Wirz in view of Gross as they are not in related technologies," and "[t]here is no motivation for one of ordinary skill in the art to modify Wirz in view of Mohr" because "[o]ne of ordinary skill in the art would not have used printing plate teachings for the impression cylinder of Wirz." (Br. 4-5; Reply Br. 3-4.)

The issue arising is: have Appellants shown that the Examiner reversibly erred in finding reasons to provide the surface of Wirz' impression cylinder with microstructure and apply a coating of phosphoric acid to improve ink repellency?

We answer this question in the negative.

Wirz describes a rotary printing press for two-sided printing of sheets (Title). The printing press includes two printing units (1, 2), the second printing unit including an impression cylinder (4) with a printing ink-repellent surface (Wirz, col. 3, ll. 50-52; col. 4, ll. 14-18; col. 5, ll. 24-28; Fig. 1). Sheets 10 are fed onto the impression cylinders and are printed at

the location of the blanket-cylinder/plate-cylinder pairs (5,6), those pairs being associated with inking units (7) and texturing devices (8) (Wirz, col. 5, ll. 31-48).

Gross describes easy-to-clean substrates provided with a coated microstructured surface (Gross, col. 1, ll. 6-9; col. 1, l. 63 to col. 2, l. 19). The microstructure enhances the water and oil repellency of the surface (Gross, col. 2, ll. 16-19; col. 2, ll. 37-41; Fig. 1).

Mohr describes a hydrophilic coating on aluminum support material for offset printing plates used with a light sensitive layer thereon (Title). In the process of lithographic printing, the light sensitive layer is exposed to light and the more soluble portions are removed to produce hydrophilic non-image areas (Mohr, col. 1, ll. 30-34). The exposed hydrophilic coating is to take up water in the printing process and also repel oily printing ink (Mohr, col. 1, ll. 35-39). Referring to several German patents with US equivalents (US 3,276,868 and 4,153,461), Mohr discloses that it was known in the art to use polyvinylphosphonic acid on printing plate support materials to render those support materials hydrophilic (Mohr, col. 2, ll. 6-14). As correctly noted by Appellants, the phosphonic acid layer described in US 3,276,868 is an intermediate layer (in the sense that it is under the light sensitive layer) and is used for a printing plate (Br. 4). We note that the phosphonic layer of US 3,276,868 is used in the same manner as described in Mohr in that it is exposed during the lithographic process and repels ink during printing.

Gross and Mohr are both directed to improving the oil repellency of a surface. Gross does so by combining a microstructure with an oil repelling coating while Mohr describes a specific oily ink repelling phosphonic acid compound known in the art. Given that Wirz specifies that the impression

cylinder used within the second printing unit (2) is to have an ink repelling surface, it follows that it would have been obvious to one of ordinary skill in the art to select the ink repelling phosphonic acid coating of Mohr and microstructure the surface as taught by Gross for the known and predictable result of obtaining an enhanced ink repelling surface on the impression roller. "The combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1739 (2007).

Appellants have not shown that the Examiner reversibly erred in finding reasons to provide the surface of Wirz' impression cylinder with microstructure and apply a coating of phosphoric acid to improve ink repellency. We, therefore, sustain the rejection of claims 1-4 and 7-9 under 35 U.S.C. § 103(a) as unpatentable over the combination of Wirz, Gross, and Mohr.

Obviousness of Claims 5 and 6

Turning to the Examiner's rejection of claims 5 and 6 over Wirz, Gross, Mohr, and further in view of Boardman, we note that the Examiner adds Boardman as evidence that it was known in the art to use an amphiphilic compound (phosphonic acid) fluorinated in its nonpolar region to make the compound both ink-repellent and water-repellent (Ans. 6).

Appellants contend that Boardman does not teach making the phosphonic acid ink-repellent and "[t]here would have been no motivation for a person of ordinary skill in the art to modify Wirz in view of Boardman (Br. 5; Reply Br. 4).

The issue is: have Appellants shown that the Examiner reversibly erred in finding a reason to fluorinate phosphonic acid compounds and use those compounds as an ink-repellent coating on Wirz' impression cylinder?

Boardman describes fluorinated phosphonic acid compounds that self-assemble into monolayers (Boardman, col. 1, ll. 5-7). According to Boardman, when coated on a substrate, the resulting coating exhibits low surface energy and can be used as soil resistant coatings, lubricity coatings, and water-repellent coatings (Boardman, col. 3, ll. 23-28; col. 4, l. 66 to col. 5, l. 3).

We cannot say that Appellants have shown the Examiner reversibly erred in finding a suggestion to use fluorinated phosphonic acid coatings on impression cylinders to obtain an ink-repelling coating. That those of ordinary skill in the art understood such coatings to be ink-repellent is evidenced from the discussion of phosphonic acids in Mohr which indicates that such acids are hydrophilic and ink-repellent. Moreover, soil resistance in general is also desirable with regard to impression cylinders which carry paper through a printing machine such as that of Wirz.

In determining that there was an apparent reason to combine, the Examiner correctly took into account the interrelated teachings of the prior art references, the effects of the demands on those in the printing art to render print substrate-contacting surfaces ink- and soil-repellent, and the background knowledge of the ordinary artisan as evidenced by the references. *See KSR Int'l v. Teleflex Inc.*, 127 S. Ct. 1727, 1740-41 (2007) ("Often, it will be necessary for a court to look to interrelated teachings of multiple patents; the effects of demands known to the design community or present in the marketplace; and the background knowledge possessed by a

person having ordinary skill in the art, all in order to determine whether there was an apparent reason to combine the known elements in the fashion claimed by the patent at issue.").

We sustain the rejection of claims 5 and 6 under 35 U.S.C. § 103(a) as unpatentable over Wirz, Gross, Mohr, and Boardman.

III. CONCLUSION

In summary, we sustain the rejection of claims 1-3 under 35 U.S.C. § 102(b) and the rejections of claims 1-9 under 35 U.S.C. § 103(a).

IV. DECISION

The decision of the Examiner is affirmed.

V. TIME PERIOD FOR RESPONSE

No time period for taking any subsequent action in connection with this appeal maybe extended under 37 C.F.R. § 1.136(a)(1)(iv).

AFFIRMED

tf/ls

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